CLAIMS

1. A method for reducing resist height erosion in a gate etch process, said method comprising steps of:

forming a first resist mask on an anti-reflective coating layer situated over a substrate, said first resist mask having a first width;

trimming said first resist mask to form a second resist mask, said second resist mask having a second width, said second width being less than said first width;

performing an HBr plasma treatment on said second resist mask;

wherein said HBr plasma treatment causes a vertical etch rate of said second resist mask to decrease.

2. The method of claim 1 wherein said step of trimming said first resist mask to form a second resist mask comprises etching said anti-reflective coating layer.

3. The method of claim 1 wherein said HBr plasma treatment causes said vertical etch rate of said second resist mask to decrease by between approximately 40.0 percent and 80.0 percent.

4. The method of claim 1 further comprising a step of etching said anti-reflective coating layer.

5. The method of claim 1 wherein said anti-reflective coating layer comprises an organic material.

6. The method of claim 1 further comprising a step of etching a hard mask layer.

7. The method of claim 1 wherein said anti-reflective coating layer comprises an inorganic material.

8. A method for reducing resist height erosion in a gate etch process, said method comprising steps of forming a first resist mask on an anti-reflective coating layer situated over a substrate, said first resist mask having a first width, trimming said first resist mask to form a second resist mask, said second resist mask having a second width, said second width being less than said first width, said method being characterized by:

performing an HBr plasma treatment on said second resist mask, wherein said HBr plasma treatment causes a vertical etch rate of said second resist mask to decrease.

9. The method of claim 8 wherein said step of trimming said first resist mask to form a second resist mask comprises etching said anti-reflective coating layer.

10. The method of claim 8 wherein said HBr plasma treatment causes said vertical etch rate of said second resist mask to decrease by between approximately 40.0 percent and approximately 80.0 percent.

11. The method of claim 8 further comprising a step of etching said anti-reflective coating layer.

12. The method of claim 8 wherein said anti-reflective coating layer comprises an organic material.

13. The method of claim 8 wherein said anti-reflective coating layer comprises an inorganic material.

14. A method for reducing resist height erosion in a gate etch process, said method comprising steps of:

forming a first resist mask on an anti-reflective coating layer situated over a substrate, said first resist mask having a first width;

performing an HBr plasma treatment on said first resist mask;

trimming said first resist mask to form a second resist mask, said second resist mask having a second width, said second width being less than said first width;

wherein said HBr plasma treatment causes a vertical etch rate of said first resist mask to decrease.

15. The method of claim 14 wherein said step of trimming said first resist mask to form a second resist mask comprises etching said anti-reflective coating layer.

16. The method of claim 14 wherein said second width is between approximately 25.0 nanometers and approximately 50.0 nanometers.

17. The method of claim 14 wherein said HBr plasma treatment causes an increase in a lateral etch rate of said first resist mask.

18. The method of claim 14 further comprising a step of etching said anti-reflective coating layer.

19. The method of claim 14 wherein said anti-reflective coating layer comprises an organic material.

20. The method of claim 14 wherein said anti-reflective coating layer comprises an inorganic material.